Update on Missouri's Efforts for NCLB

Expectations, Assessments, and Model Curriculum

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DESE

SMCAA 2004 Spring Conference

3/03/04

Supporting NCLB

Mathematics

- Grade Level Expectations
- Examples, Glossary and Teacher notes
- Practice assessment examples
- Model Curriculum

Communication Arts

- Grade Level Expectations
- Glossary
- Practice assessment examples
- Model Curriculum

Supporting NCLB

Social Studies

- Grade Level Expectations
  - Instructional and process strategies

Science

- Grade Level Expectations

Algebraic Relationships

1. Understand patterns, relations and functions				
	Kindergarten	**Grade 1**	**Grade 2**	**Grade 3**
A **Recognize and extend patterns**	recognize or repeat sequences of sounds or shapes	extend patterns of sound, shape, motion or a simple numeric pattern	describe and extend simple numeric patterns and change from one representation to another	extend geometric (shapes) and numeric patterns to find the next term
ST	**MA 4 1.6**	**MA 4 1.6**	**MA 4 1.6**	**MA 4 1.6**
FR	**VIII.a**	**VIII.a**	**VIII.1.b**	**VIII.a**
B **Create and analyze patterns**	create and continue patterns	describe how simple repeating patterns are generated	describe how simple growing patterns are generated	represent patterns using words, tables or graphs
ST		**MA 4 1.6, 3.5**	**MA 4 1.6, 3.5**	**MA 4 3.6**
FR		**VIII.a**	**VIII.a**	**VIII.3.a**

Expectations
Looking At Individual Grades

Strand: Algebraic Relationships
Big Idea: 1
Concept: B Create and Analyze Patterns

Grade 1

Describe how simple repeating patterns are generated.

Grade 2

Describe how simple growing patterns are generated.

5, 7, 9, 11, _____

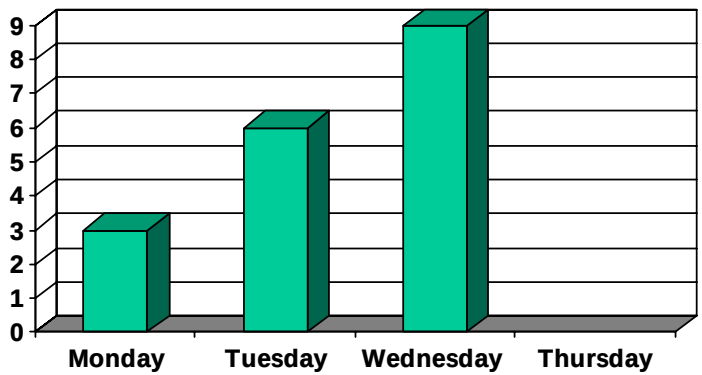
Grade 3

Represent patterns using words, tables or graphs

Students	1	2	3	4	5
Books Read	3	6	9		

Grade 4

Analyze patterns using words, tables and graphs



Describe the pattern and predict what will happen on Thursday.

Grade 5

Represent and analyze patterns using words, tables and graphs

Given the pattern
3, 6, 12, 24, ….

Write a pattern with the same rule if the first number is 5

Grade 6

Represent and describe patterns with tables, graphs, pictures, symbolic rules or words

From the pattern in the table below, determine the value for the n^{th} term

1	**2**	**3**	**4**		**N**
6	**7**	**8**	**9**		

Grade 7

Analyze patterns represented graphically or numerically using words or symbolic rules, including recursive notation

Determine the value of y when x = 3 and when x = n

X	1	3	4	7	N
Y	8		11	14	

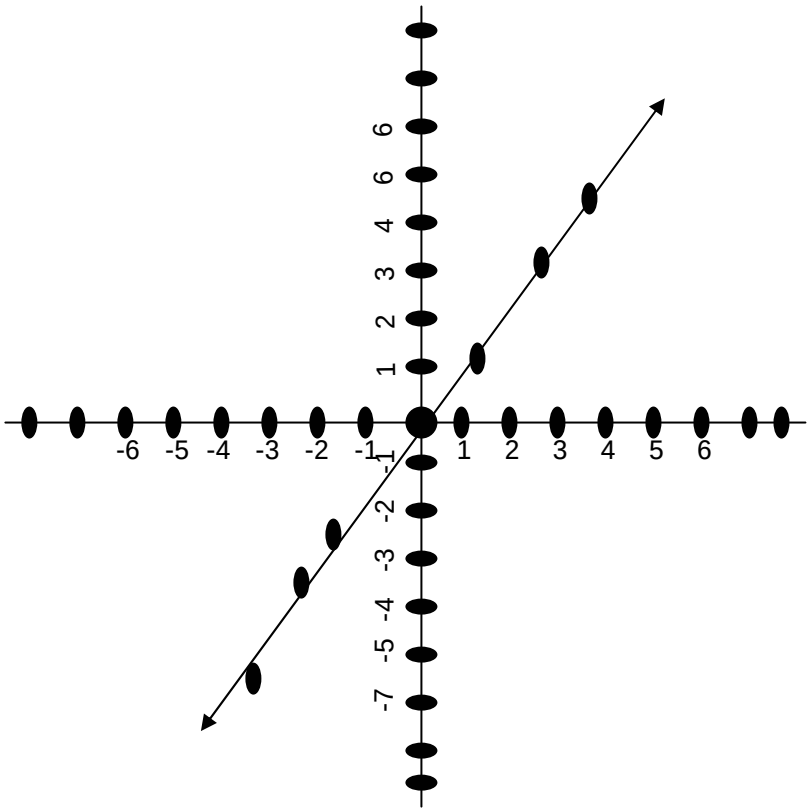
when x=3 y=10

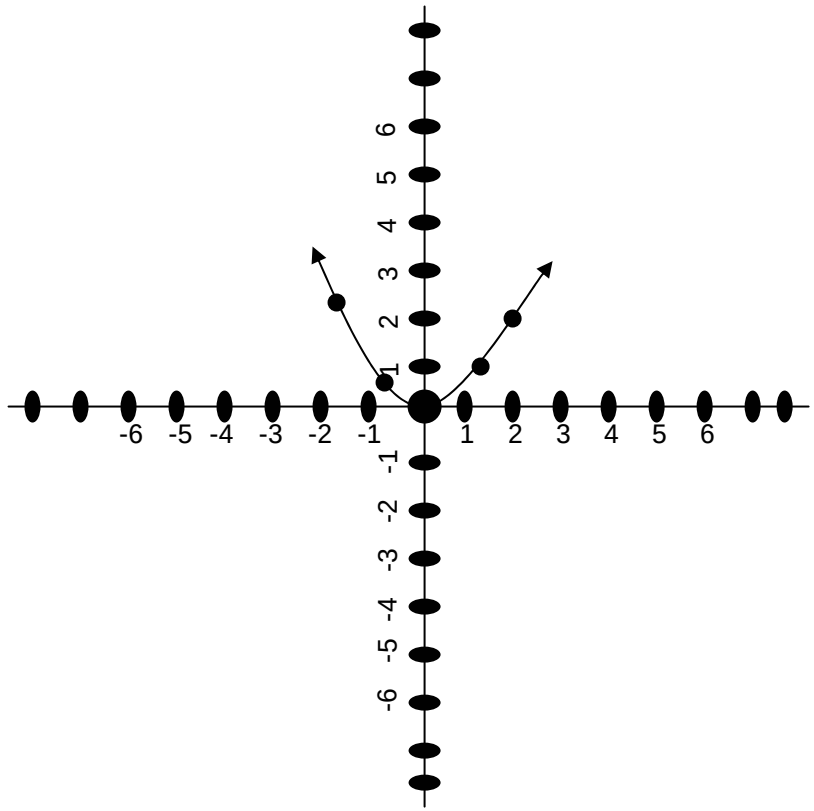
when x=n y= n +7

Grade 8

Generalize patterns represented graphically or numerically using words or symbolic rules, including recursive notation.

Write an equation for the following graphs:





Algebraic Relationships

(Strand Level)

1.Understand patterns, relations and functions (Big Idea or Understanding Level)				
	Kindergarten	**Grade 1**	**Grade 2**	**Grade 3**
A **Recognize and extend patterns** **(Concept Level)**	recognize or repeat sequences of sounds or shapes **(Expectation Level)**	extend patterns of sound, shape, motion or a simple numeric pattern	describe and extend simple numeric patterns and change from one representation to another	extend geometric (shapes) and numeric patterns to find the next term
ST	**MA 4 1.6**	**MA 4 1.6**	**MA 4 1.6**	**MA 4 1.6**
FR	**VIII.a**	**VIII.a**	**VIII.1.b**	**VIII.a**
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Coding Expectations

- Strand (First Letter)
- Big Idea (Number)
- Concept (Row letter)
- Expectation (Grade Level)

Algebraic Relationships

1. Understand patterns, relations and functions				
	Kindergarten	**Grade 1**	**Grade 2**	**Grade 3**
A **Recognize and extend patterns**	recognize or repeat sequences of sounds or shapes (A1AK)	extend patterns of sound, shape, motion or a simple numeric pattern	describe and extend simple numeric patterns and change from one representation to another	extend geometric (shapes) and numeric patterns to find the next term (A1A3)
ST	**MA 4 1.6**	**MA 4 1.6**	**MA 4 1.6**	**MA 4 1.6**
FR	**VIII.a**	**VIII.a**	**VIII.1.b**	**VIII.a**
B **Create and analyze patterns**	create and continue patterns	describe how simple repeating patterns are generated	describe how simple growing patterns are generated (A1B2)	represent patterns using words, tables or graphs
ST		**MA 4 1.6, 3.5**	**MA 4 1.6, 3.5**	**MA 4 3.6**
FR		**VIII.a**	**VIII.a**	**VIII.3.a**

Materials to Support the Expectations

Mathematics Examples - Expectation Code (N3D9)

Estimate and justify solutions	Judge the reasonableness of numerical computations and their results.	**Cindy and Mark were discussing the pattern shown below. Cindy felt like the 20th term would be getting very close to zero and would be about 9.537 x 10^{-5}. Mark disagreed with Cindy's solution. Which student is correct? Justify your answer.**

Term Number	**1**	**2**	**3**	**4**	**5**
Value	**50**	**25**	**12.5**	**6.25**	**3.125**

Solution: Cindy is correct the pattern is to divide the previous term by 2, which could be represented several ways. Students should be using graphs or equations to generate a justification. Using technology would make this problem more accessible, however students should understand that some tools will round numbers resulting in a misleading answer.

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1. Use a mental math strategy to give a low and high estimate for the product of 5.4 and 3.7. Explain your method.

2. Which is larger? Explain how you can tell without doing the complete computations.
   a. $.9$ or $.9^3$
   b. 5 or $5 \div \frac{1}{2}$
   c. $\sqrt{33}$ or 6
   d. $\sqrt{27}$ or $\sqrt[3]{27}$

Answers:

1. Low estimate: 3 * 5 = 15; high estimate: 4 * 6 = 24. I rounded both numbers down to get a low estimate and I rounded both numbers up to get a high estimate.

a. .9 b. $5 \div \frac{1}{2} = 10$ c. $6 = \sqrt{36}$ d. $\sqrt{27}$ (greater than 5; $\sqrt[3]{27} = 3$)

Communications Arts Glossary

This Glossary provides definitions/elaborations for terms that are shown in bold type in the Communication Arts Grade-Level Expectations; these terms are underlined in this Glossary. The Glossary includes other terms in order to clarify important concepts in Communication Arts.

active-listening behaviors: actions that let the speaker know that you are listening *(make eye contact, nod your head, remain attentive, ask a good question, summarize, and offer a compliment or comment)*

active voice: writing in which the subject of the sentence performs the action of the verb *(Writing is in the **passive voice** when the subject receives the action.)* LBB

affixes: one or more sounds or letters attached to the beginning or end of a word or base
(also known as prefixes or suffixes)

alliteration: the repetition of the initial sounds in neighboring words or stressed syllables *(e.g., "Lively Louis loves lilies.")*

Using Assessments to Develop Curriculum

Valuable Skills for Classroom Assessment

- ✓Effective questioning
- ✓Constructing tasks
- ✓Knowledge of student's thinking
- ✓Managing information
- ✓Sampling student's work
- ✓Constructing rubrics and scoring schemes
- ✓Collaboration with others

Classroom Assessments in Mathematics, Bright and Joyner

Classroom Assessment

- Classroom assessment is not the same as grading
- Many teachers assess to assign grades; few teachers assess to learn about their student's thinking
- Assessments should help the teacher plan instruction that builds on the strengths of students

Classroom Assessments in Mathematics, Bright and Joyner

Which tells us more about student thinking?

A. Select the correct answer. 7 x15

a. 95 b. 105 c. 115 d. 125

B. Select the correct answer. 7x15

a. 22 b. 85 c. 105 d. 715

C. Solve 7x15 in three different ways by using other multiplication facts.

Move

From Covering the Curriculum

To

Creating Curriculum and Understanding

Building A Model Curriculum

Alignment

- Is not simply coding expectations to objectives
- Is not creating individual lesson for each expectation
- Is about making connections between expectations (within and across strands)
- Is about creating powerful lessons with multiple expectations
- Is using expectations at the beginning - not at the end

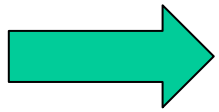
Does it make a difference?

Curriculum → Expectations

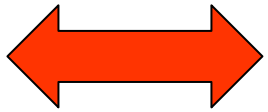
Expectations → Curriculum

Curriculum → Expectations

- Efficient way to evaluate existing curriculum for gaps
- Tendency to accept partial alignment
- Tests for existing and not necessarily quality
- Looks at individual objectives and not sets
- Development occurs primarily in missing areas
- Limited connections beween expectations

Expectations  Curriculum

- Considers pre- and post- grade levels
- Opportunity to develop multiple and common assessments across grade levels
- Make connections across and within strands
- Vertical and horizontal alignment
- Builds rather than patches
- Needs lots of resources and time

Expectations  Curriculum

- Take advantage of existing good curriculum work
- Involvement of many teachers
- Efficient way to scale up product development

Alignment may take place at the concept level rather than the expectation level

$$\begin{array}{r} 324 \\ \times\ 128 \\ \hline \end{array}$$

Not an expectation but at concept " Compute Problems"

Using A Backward Design

3 Stages of ("Backward") Design

1. Identify desired results

2. Determine acceptable evidence

3. Plan learning experiences & instruction

Backward Design

- Start with the end in mind. - Covey
- What are the desired results?
- Assessments are not just something to do at the end.
- What types of lessons and activities are necessary to successfully perform on the assessment?

Why “backward”?

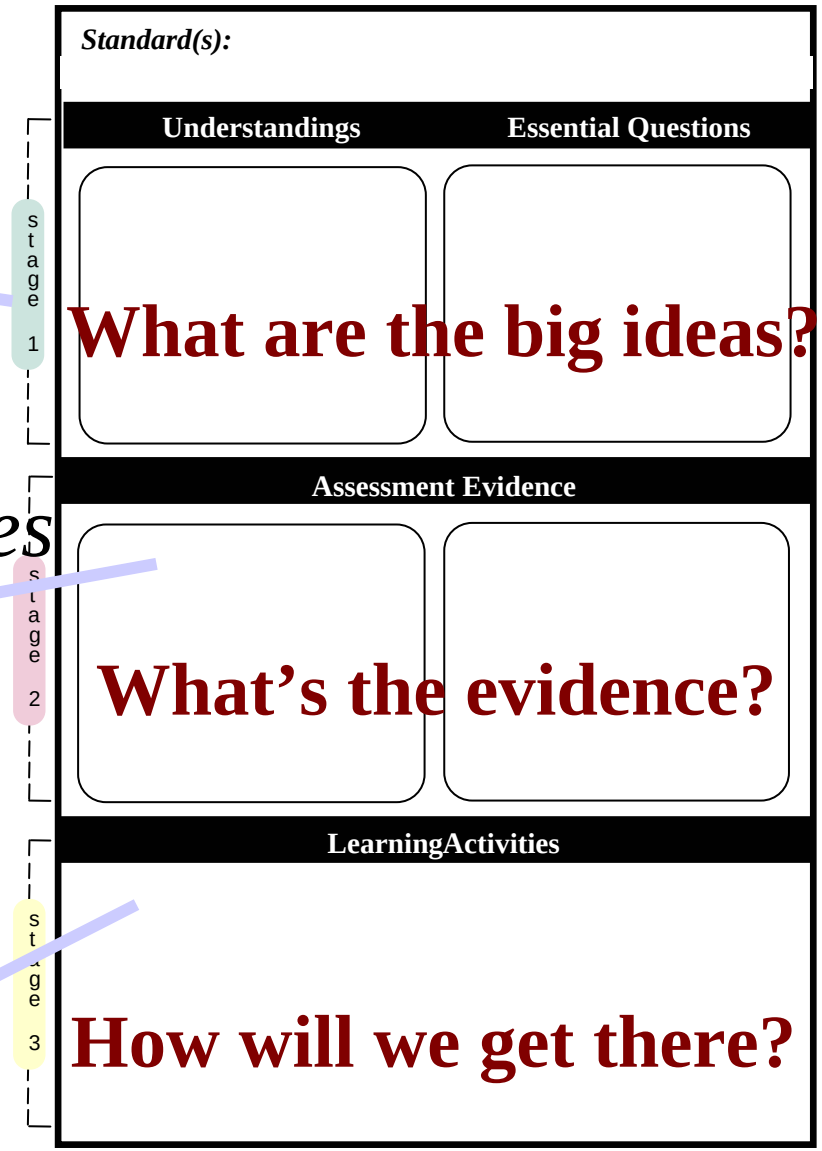
- The stages are logical but they go against habits
  - We’re used to jumping to lesson and activity ideas - before clarifying our performance goals for students
  - By thinking through the assessments upfront, we ensure greater alignment of our goals and means, and that teaching is focused on desired results

The “big ideas” of each stage:

✉ *Unpack the content standards and ‘content’, focus on big ideas*

✉ *Analyze multiple sources of evidence, aligned with Stage 1*

✉ *Derive the implied learning from Stages 1&2*



Stage 1

- U — **Understandings**
- Q — **Questions**
- CS — **Content Standards**
- K — **Knowledge & Skill**

Stage 2

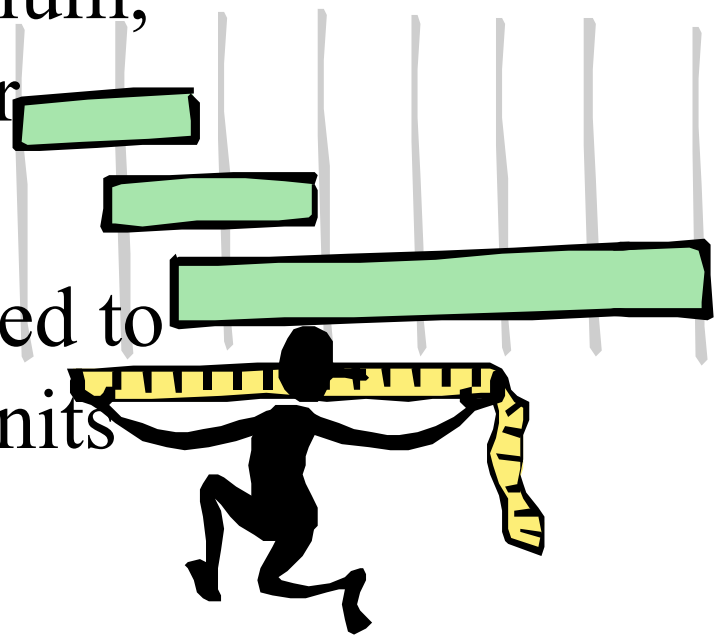
- T — **Task(s)**
- R — **Rubric(s)**
- OE — **Other Evidence**

Stage 3

- L — **Learning Plan**

Units

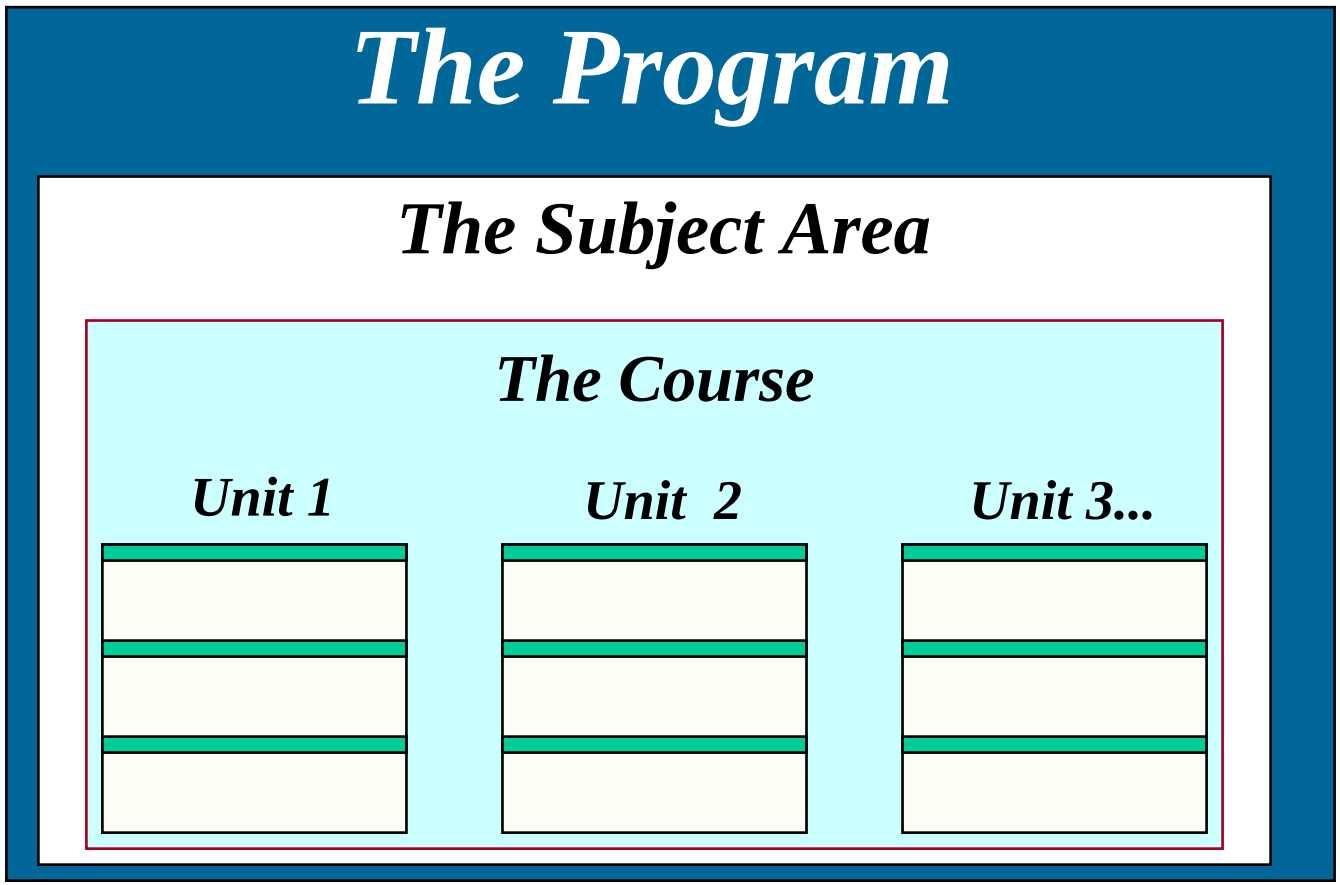
- Units are Building Blocks
  - The K - 12 model curriculums will ultimately built out of units
  - To build and map a curriculum, then, group units into larger entities
  - To share effectively, we need to be able to mix and match units



The unit is the "unit of analysis"

- What is a "unit"?
  - Unit = a coherent set of lessons, organized around a theme, a performance, an idea, or a text
  - A Unit is *big enough* to help us avoid -
    - micro-managing our lessons
    - overlooking complex performance goals
  - A Unit is *small enough* to help us avoid -
    - vague and unhelpful planning, typically ending in "coverage"

Units are the building blocks of a complete curriculum...



Developing a Model Curriculum

- How shall we make connections between expectations?
- What will summative assessments look like?
- What type of questions might students ask?
- How shall we handle data from pilot lessons?
- What learning activities will we use to make students proficient?

Communication Arts Model Curriculum Template

Big Idea: *These will come from the "clusters" of Grade Level Expectations.*

Grade Level: *We will begin this work for grades 3, 7 & 11.*

Completion Time (Instruction and Assessment): *Each curriculum unit developed for the Communication Arts model curriculum will take no more than 10 -50 minute class periods. The entire model curriculum will take approximately 18 weeks to implement.*

Prior Knowledge	Objectives	Purpose
This will include the knowledge and skills that students must have prior to this instruction.	*Objectives will be aligned to the GLE's and the Show Me Standards.* *Many of the GLE's will be used "as is" as the learner objectives. Some additional learner objectives may be written to connect two GLE's or to focus on a specific skill/process within a GLE.*	*This will include the reasons the knowledge and skills represented in the learner objectives are important for students to master.*

Materials Needed:

Objective(s): Record and organize relevant information using a variety of note-taking methods and organizational strategies. W3B, IL1C, CA 2, CA 3, CA 4, 1.2, 1.8

Learning Activities	Teacher's Support	Questions for Students During Instruction
Connections: In small groups, ask students to name as many different types of note-taking or graphic organizers they can remember using. Next, ask a representative from each group to add examples (until a master list has been completed). Modeling: Teacher will model how to take notes (informal outline, webbing, and a combination of the two) from a nonfiction passage. Guided Practice: Given the same short magazine article or textbook entry, students will use the Cooperative Learning Structure "Round Robin" in groups to create an informal outline, webbing or combination on chart paper. After presenting to the class, a teacher led discussion will be held to determine similarities and differences between groups. Formative Assessment: Given a different nonfiction passage, students are to select a note-taking strategy and create an informal outline, webbing or combination showing detailed notes from passage.	Anticipated Student Questions and Answers: *Note: Teachers, please add comments & questions to this column. *Why do we take notes? It is one of the most useful study skills. • Why do we have to take notes in a certain way? You do not. We all have our own style. I'll teach you some strategies and eventually you will come up with your own style. • Which style is best? There is no one best way. What works with your particular learning style works best for you. Suggestions for the modeling activity: • Be sure to use a shorter article or book. Even a passage from the students' social studies or science class will work. • Pass out partial notes of your children's book for them to complete. • After completion of notes, lead the class in a discussion of problems or questions.	Connections: *Note: Teachers, please add comments & questions to this column. • What is the purpose of notes? • What are different ways to take notes and organize information? • Are some ways better than others? If so, how? When? Modeling Activity: • Do your notes look like mine? • Were there ways you would have liked to take the notes differently? • Was this the best way to organize the information given?

Process

- Regionally developed
- Content experts – teachers, supervisors, regional facilators
- Pilot lessons
- Backward design

NCLB Assessments

- **2006 Testing**
  - **Mathematics Grades 3-8, 10**
  - **Communication Arts Grades 3-8, 11**
- **2008 Testing**
  - **Science Grade Span Tests**
- **2005 Field Tests and Level Setting**

Projected Delivery Dates

Completed Expectations

- **Communication Arts**
  - **Glossary (Draft)**
- **Mathematics**

Math Examples, Notes, and Glossary–Spring/ Summer 2004

Model Curriculums - Late fall 2005

Fall GLE Workshops

Math		Communication Arts	
Sept. 22	Webb City	Sept. 21	Cape Girardeau
Sept. 23-24	Springfield (2)	Sept. 22-23	St. Louis (2)
Sept. 27	Columbia	Sept. 28	Kirksville
Sept. 29	St. Joseph	Sept. 29	Columbia
Sept.30–Oct.1	Liberty	Oct. 5	St. Joseph
Oct. 4	Kirksville	Oct. 6-7	Liberty (2)
Oct. 6	Cape Girardeau	Oct. 12	Webb City
Oct. 7-8	St. Louis (2)	Oct. 13-14	Springfield (2)